WHAT IS CLAIMED IS:

1   1.   A method for providing cascaded network packet search

2 engines, comprising:

3   receiving a search command at one of the network

4 packet search engines, the search command comprising a specific

5 search key;

6   determining at the network packet search engine a

7 longest prefix match based on the specific search key; and

8   determining at the network packet search engine

9 whether the longest prefix match comprises an overall longest

10 prefix match among the cascaded network packet search engines

11 such that any of the cascaded network packet search engines may

12 comprise the overall longest matching prefix independently of

13 position relative to the other cascaded network packet search

14 engines.

1   2.   The method of Claim 1, further comprising responding

2 to the search command when the longest prefix match comprises

3 the overall longest prefix match.

1   3.   The method of Claim 2, responding to the search

2 command comprising actively responding to the search command.

1   4.   The method of Claim 2, responding to the search

2   command comprising passively responding to the search command.

1   5.   The method of Claim 1, further comprising storing a

2   mock result when the longest prefix match fails to comprise the

3   overall longest prefix match.

1   6.   The method of Claim 1, the one of the network packet

2   search engines comprising a peripheral network packet search

3   engine, determining whether the longest prefix match comprises

4   the overall longest prefix match comprising:

5   receiving longest match input data from an adjacent

6   network packet search engine;

7   comparing the longest match input data to the longest

8   prefix match; and

9   determining that the longest prefix match is longer

10   than the longest match input data.

1   7.   The method of Claim 1, the one of the network packet

2   search engines comprising a central network packet search

3   engine, determining whether the longest prefix match comprises

4   the overall longest prefix match comprising:

5   receiving first longest match input data from a first

6   adjacent network packet search engine and second longest match

7   input data from a second adjacent network packet search engine;

8   comparing the first longest match input data to the

9   longest prefix match and the second longest match input data to

10   the longest prefix match; and

11   determining that the longest prefix match is longer

12   than the first longest match input data and longer than the

13   second longest match input data.

1   8.   A method for providing cascaded network packet search

2   engines, comprising:

3   receiving a search command at a plurality of network

4   packet search engines, the search command comprising a specific

5   search key;

6   at each of the network packet search engines,

7   determining a longest prefix match for the network packet search

8   engine based on the specific search key;

9   at each of the network packet search engines,

10   determining whether the longest prefix match comprises an

11   overall longest prefix match among the plurality of network

12   packet search engines; and

13   responding to the search command based on the

14   determination that the network packet search engine comprises

15   the overall longest prefix match.

1   9.   The method of Claim 8, responding to the search

2   command comprising actively responding to the search command.

1   10. The method of Claim 8, responding to the search

2   command comprising passively responding to the search command.

1   11. The method of Claim 8, further comprising storing a

2 mock result based on the determination that the network packet

3 search engine fails to comprise the overall longest prefix

4 match.

1   12. The method of Claim 8, determining whether the longest

2 prefix match .comprises the overall longest prefix match

3 comprising, for each peripheral network packet search engine:

4   receiving longest match input data from an adjacent

5 network packet search engine;

6   comparing the longest match input data to the longest

7 prefix match; and

8   determining whether the longest prefix match is longer

9 than the longest match input data.

1   13. The method of Claim 8, determining whether the longest

2 prefix match comprises the overall longest prefix match

3 comprising, for each central network packet search engine:

4   receiving first longest match input data from a first

5 adjacent network packet search engine and second longest match

6 input data from a second adjacent network packet search engine;

7   comparing the first longest match input data to the

8   longest prefix match and the second longest match input data to

9   the longest prefix match; and

10   determining whether the longest prefix match is longer

11   than the first longest match input data and longer than the

12   second longest match input data.

1   14. A method for operating a network processing unit

2   coupled to a plurality of network packet search engines,

3   comprising:

4   sending a search command to the plurality of network

5   packet search engines; and

6   receiving a response to the search command from a

7   single one of the network packet search engines, the single

8   network packet search engine comprising an overall longest

9   prefix match among the plurality of network packet search

10 engines independently of position relative to the other network

11 packet search engines.

1   15. The method of Claim 14, receiving a response to the

2   search command comprising receiving an active response to the

3   search command.

1   16. The method of Claim 14, receiving a response to the

2   search command comprising receiving a passive response to the

3   search command.

1   17. A network packet search engine coupled to at least one

2 other network packet search engine, the network packet search

3 engine operable to receive a search command, the search command

4 comprising a specific search key, to determine a longest prefix

5 match based on the specific search key, to determine whether the

6 longest prefix match comprises an overall longest prefix match

7 among the plurality of network packet search engines, and to

8 respond to the search command based on the determination that

9 the network packet search engine comprises the overall longest

10 prefix match.

1   18. The network packet search engine of Claim 17, further

2 operable to actively respond to the search command.

1   19. The network packet search engine of Claim 17, further

2 operable to passively respond to the search command.

1   20. The network packet search engine of Claim 17, the

2 network packet search engine comprising a peripheral network

3 packet search engine and further operable to determine whether

4 the longest prefix match comprises the overall longest prefix

5 match by receiving longest match input data from an adjacent

6 network packet search engine, comparing the longest match input

7   data to the longest prefix match, and determining whether the

8   longest prefix match is longer than the longest match input

9   data.

1   21.   The network packet search engine of Claim 17, the

2   network packet search engine comprising a central network packet

3   search engine and further operable to determine whether the

4   longest prefix match comprises the overall longest prefix match

5   by receiving first longest match input data from a first

6   adjacent network packet search engine and second longest match

7   input data from a second adjacent network packet search engine,

8   comparing the first longest match input data to the longest

9   prefix match and the second longest match input data to the

10 longest prefix match, and determining whether the longest prefix

11 match is longer than the first longest match input data and

12 longer than the second longest match input data.

1   22. A processing system, comprising:

2   a network processing unit; and

3   a plurality of network packet search engines coupled

4   to the network processing unit, each network packet search

5   engine operable to receive a search command from the network

6   processing unit, the search command comprising a specific search

7   key, to determine a longest prefix match based on the specific

8   search key, to determine whether the longest prefix match

9   comprises an overall longest prefix match among the plurality of

10 network packet search engines, and to respond to the search

11 command based on the determination that the network packet

12 search engine comprises the overall longest prefix match.